

## Marie Skłodowska-Curie PostDoc Positions in Germany

### “Expression of Interest” for hosting Fellows

#### 1. Valid for the following Calls:

<input type="checkbox"/> 2017
x 2018
x 2019
x 2020

#### 2. Interested institution (legal person):

**DBFZ Deutsches Biomasseforschungszentrum  
gemeinnützige GmbH**

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The DBFZ's **mission** is to conduct wide-ranging, application-, sustainability- and technology-oriented research aimed at the efficient integration of biomass resources into the current and future energy system and into the bioeconomic system of the future, and to provide scientific support to the related developments. The target groups for the R&D activities and scientifically based services of the DBFZ are all the relevant players in the scientific research, industrial and political spheres linked to the bioenergy and integrated bioeconomy.

DBFZ actively supports the energy transition (“Energiewende”) in Germany. As a pioneer in the field of efficient integration of biomass as a valuable resource into the current and future energy system and into the bioeconomic system of the future, DBFZ researchers develop technical innovations, processes and products on a high scientific level.

Giving particular consideration to the future developments (environmental concerns and economic impact), research policy challenges and framework conditions in relation to the use of biomass as a base material and an energy source, DBFZ developed its own **scientific vision** for the future of bioenergy based on the “Smart Bioenergy Concept”<sup>1</sup>.

To bring together and focus the main research activities and efforts towards the “Smart Bioenergy” concept, a total of 154 scientists (beside the Administrative Department) is currently<sup>2</sup> working in the DBFZ within **five Research Focuses** (RFs) s. below.

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<sup>1</sup> “Smart Bioenergy” means that modern biomass utilisation and integrated systems that optimally interact with various renewable energy sources are developed further. It also means that material and energy use are linked within the framework of framework of the bioeconomy. Thrän, D. (Ed.) (2015): Smart Bioenergy. Technologies and concepts for a more flexible bioenergy provision in future energy systems. Springer-Verlag. Heidelberg. ISBN 978-3-319-16192-1.

<sup>2</sup> as of 31.12.2016

The DBFZ is equipped with state of the art **research facilities** which include e.g. analytical labs, engine testbeds, biogas lab, research biogas plant, solid compacting center, technical centre with ten combustion test beds, fuel conditioning lab, emission measurements.

### 3. Institute/Department:

We are looking for post-doctoral researchers within our five RFs:

#### **RF: Systemic contribution of biomass**

This research focus contributes to the creation of sustainable bioenergy strategies at national and international level. To that end, it identifies regional and global biomass potential and investigates and assesses the wide-ranging options offered by different biomass recovery concepts. The primary aim is to answer methodological and technical system-related questions on the efficiency and sustainability of biomass use from economic, ecological and technical viewpoints, incorporating both the land resources used as well as treatment and conversion technologies specific to the energy source. The combination of these topic areas provides the basis for deriving strategies and recommendations for action for decision-makers in the political and business spheres.

#### **RF: Anaerobic processes**

This research focus investigates processes using micro-organisms to convert biomass under anaerobic conditions form the basis of many biotechnologies for the production and supply of material and energy sources. The topics addressed within this research focus follow the vision of "Smart Bioenergy" as well as delivering information, methods, technical concepts, and processes to support the transition process of the biogas sector. The transfer and establishment of compatibility to international developments and needs is an integral part of this research focus.

#### **RF: Processes for chemical bioenergy sources and motor fuels**

This research focus is an important element of the overall process chain from the raw biomass material to biofuels and chemical bioenergy sources as products of biorefineries. In addition to process and concept development, it also comprises implementation on a laboratory and pilot plant scale, as well as process simulation and assessment of technical systems. The primary aim is to contribute by innovative technology to the flexible operation, high efficiency and sustainable conception of biorefineries, thereby also fulfilling the requirements within the context of the bioeconomy. To that end, chemical refinement focused on hydrothermal processes (HTP) is advanced. Solid-liquid and liquid-liquid separation technologies (decanter centrifuge, membrane filtration, I/I extraction, preparative chromatography) are adapted to biorefinery specific challenges to develop efficient downstreaming processes. Another element is the development of synthesis gas processes to create high-grade products, focused on biomethane in the form of bio-synthetic natural gas (bio-SNG).

#### **RF: SmartBiomassHeat**

Heat generation from biomass is the biggest bioenergy sector with relatively low prices for GWG reduction. The research focus concentrates on small-scale, renewable heat production in single units and small combinations up to village or town neighbourhood scale using intelligent heat technologies interlinking other renewable energy sources and based on biomasses primarily originating from residues, by-products and wastes. The primary aim is to make optimal technological and economic use of all renewable heat resources based on flexible, demand-adapted deployment of heat technologies based on biomass. This involves mapping the entire chain from grafting biomass fuels through new conversion plants to integration into the heat and power grid of the biomass heaters (executed in future also as combined heat and power plants), analysing, simulating, and

optimising them individually and collectively. It also entail the necessary technical component development and linking control research and development through flexible operation (including micro-and small-scale CHP) to achieve efficient, environmentally friendly, economical, safe, demand-adapted, flexible, and sustainable (smart) operation (SmartBiomassHeat).

**RF: Catalytic emission control**

The primary aim for this focus area is to do research on catalytic emission control for combustion processes using solid-state catalysts and having gaseous, liquid and solid bioenergy sources. The focus is on catalytic reduction of the combustion emissions methane (CH<sub>4</sub>), non-methane volatile organic compounds, semi- and non-volatile hydrocarbons such as polycyclic aromatic hydrocarbons (PACs) and polychlorinated dibenzodioxins/polychlorinated dibenzofurans (PCDD/PCDF), soot particles (black carbon) and nitrogen oxides (NOX). These pollutants can be substantially reduced by catalytic exhaust systems and integrated methods. The aim of this research focus is to develop catalysts and processes which permit virtually zero-emission combustion of bioenergy sources in line with environmental requirements.

**4. Position, scientific requirements, topic, discipline:**

**PostDoc Position:**

- Life Sciences
- Natural Sciences
- Engineering Sciences
- Social Sciences and Humanities

**5. Contact person (name and e-mail address):**

**Research Coordinator, Doctoral's supervisor**

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**Applications**

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**6. Deadline for considering interests by post-doctoral applicants:**

Please get in contact with us on the latest 4 months before the deadline of the respective call. Consider that in case of secondments your research stay at DBFZ shall not be shorter than 6 months.

Interested applicants shall write a one-page proposal including their recent position, scientific field, planned topic/project, propose suitable research focus at DBFZ.